

Iron chelators and antioxidants regenerate neuritic tree and nigrostriatal fibers of MPP⁺/MPTP-Lesioned dopaminergic neurons

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© 2015 Aguirre et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. Neuronal death in Parkinson's disease (PD) is often preceded by axodendritic tree retraction and loss of neuronal functionality. The presence of non-functional but live neurons opens therapeutic possibilities to recover functionality before clinical symptoms develop. Considering that iron accumulation and oxidative damage are conditions commonly found in PD, we tested the possible neuritogenic effects of iron chelators and antioxidant agents. We used three commercial chelators: DFO, deferiprone and 2,2'-dipyridyl, and three 8-hydroxyquinoline-based iron chelators: M30, 7MH and 7DH, and we evaluated their effects in vitro using a mesencephalic cell culture treated with the Parkinsonian toxin MPP⁺ and in vivo using the MPTP mouse model.